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EDITORIAL NOTES

FREEDOM OF CHOICE

THIRTEEN "dwellings of the future," erected by the Government at Northolt, are ready for inspection by representatives of local authorities. Last week we had the opportunity of seeing these new dwellings, some of which are unorthodox. They consist of different types of houses and flats, including two all-steel constructions, which have been erected for demonstration purposes by the Ministry of Works under the Government emergency housing scheme. The dwellings are designed with an eye to solving problems of labour and supplies. Some are of brick, in traditional style, some are part brick and part steel; other types include a block of four flats having an average area of 900 super feet. The site man-hours for the flatted dwellings are approximately 900 a flat, compared with 2,100 siteman-hours for the standard type of brick houses; walls, ceilings, internal partitions, plumbing, and floors are factory made and assembled on the site. There are examples of the Dudley urban house and its companion designed for use in rural areas. There are terrace houses of the traditional type. All are of Government design, apart from two very attractive steel-framed houses sponsored by the British Iron and Steel Federation—a private exhibit. It will be gathered that the venture as a whole is no small-scale affair, that the houses on view at Northolt offer a wide freedom of choice and show great variety in constructional methods and materials. In regard to cost, compared with 1939, bricks have increased in price by 60%, cement by 44%, and timber by no less than 160%. For a brick house of 850 square feet we were given an estimate of £759—which is only an estimate, and as such includes no profit and no allowance for site value.

We have given the foregoing brief outline as a background to the types of new housing, in the equipment of which the Gas Industry is obviously destined to play a very large part, and it was with lively satisfaction that we saw at Northolt how excellently the Industry is in fact represented. On a later page we detail the equipment already installed in these demonstration dwellings, and the list speaks for itself, and is indication of close and effective co-operation between the Industry and the Government Departments concerned with the housing programme ahead. Particularly interesting is the block of terrace houses, two of which have been equipped by the Gas Industry—one all-gas, the other gas-cum-coke—and two by the electricity industry, again one partially and the other wholly electric. The modern gas and coke equipment is a really excellent and practical display, marked by new conceptions of installation work fitting in with the views and the ideas of the Ministry of Works in regard to lay-out, and above all characterized by a remarkable degree of flexibility. In very truth the householder and housewife of the future have before them freedom of choice, and it is for the Industry to guide that choice. How soon it will be possible to develop the proposed scheme in a big way, to what extent equipment will in fact be available in the immediate post-war period, we cannot say. Perhaps there will be a disappointing time lag in the transition from armament-making to the peacetime production of Gas Industry appliances, but from the point of view of cooking, heating, water heating, and refrigeration, the Industry has a complete, comprehensive, and attractive service to offer—attractive to the individual housewife, to the local authority in its cleanliness and freedom from smoke, to the community and the nation in its wise conservation of coal. The range of this service is for all local authorities to see at Northolt, where the demonstration of gas equipment is, in fact, bright, reassuring, and impressive, a good starting-point for Gas Industry expansion coupled with user-satisfaction. The task of the Industry is to see that its potential is harnessed.

CO-OPERATION AND GOODWILL

WE have spoken of the harnessing of potential—of seeing that the service the Industry has to offer finds its full and most advantageous practical application; and this calls for co-operation and the building up of goodwill. From time to time we have emphasized the need for taking the architect and the builder into our confidence and taking the trouble to keep them well informed of agreed installation practice. The same applies to keeping in the closest touch with local housing authorities. We realize that the Industry as such has not been idle in this regard, and we appreciate the steps which have recently been taken in pursuit of the aim of—to put it bluntly—educating the architect and the builder, for it is obvious enough that they need guidance and advice on up-to-date gas supply practice. The matter was discussed pointedly in the recent report of the Installations Committee of The Institution of Gas Engineers, convened at the request of the Ministry of Works, on which report we have commented in these columns, referring particularly to the fact that lack of systematic advance planning for services in buildings has meant the adoption subsequently of methods at once expensive, inconvenient, and architecturally undesirable. We believe that that report, if acted upon—and we have no reason for thinking that action will not be taken on it—will do a power of good. But we would add the proviso that what it can accomplish will be in direct proportion to the efforts made by each individual gas undertaking in setting out to interest and inform the architect and the builder and the local housing authority. Such efforts should be regarded not just as a precautionary business proposition, but as a national service—which, in fact, such efforts constitute.

Apart from the architect, the builder, and the local authority there is, however, another important aspect in the building-up of goodwill in furtherance of a more useful and more extensive Gas Industry. We are of opinion that we should consider as more than a minor problem the fostering of co-operation between gas undertakings and builders' merchants and plumbers generally. On the matter of fuel equipment in the home the builders' merchant and the plumber have with the public considerable hearing and considerable voice. They could do much to help the Gas Industry, and as a corollary the Industry could do much to help them. We realize fully why a quarter of a century or more ago it became desirable in the public interest for gas undertakings, as a safeguard, to carry out the fixing of appliances and really to take this work out of the hands of plumbers, many of whom simply did not understand the relationship between correct installation, including the choice of the suitable appliance for the job, and safe and satisfactory performance. It was, we think, a necessary step, but it hardly made for the creation of goodwill.

Times have changed. The Industry itself has new conceptions of what constitutes satisfactory installation. Enlightened undertakings have been at pains to adopt training schemes for fitting staffs, though more will have to be done in this direction after the war. To what extent, we would ask, are we in a position to enlist the support of the builders' merchant and the plumber? Is it too much to suggest that we might, through some co-operative arrangement, train the plumber in the essentials of good fitting practice, the while retaining responsibility for the finished work and acting in understanding in a supervisory capacity? Should such a scheme be practical it would be tantamount to the enlistment of a small and knowledgeable army essentially in daily contact with the public; and commensurate with the possible advantages the cost entailed would be small. It is a matter which we know to be interesting several in our Industry at the present time.

Personal

Mr. HARRY THOMPSON has recently had to retire from active work owing to continued ill-health. He has been for very many years Manager of the Erection Department of the Whessoe Foundry & Engineering Co., Ltd. In that capacity he has had numerous friendly contacts with gas engineers for whom his staffs have erected plants. Mr. Thompson received the presentation from his colleagues of a gold wrist watch. He will be succeeded by Mr. A. NELSON, who has been his deputy for some years.

* * *

In appreciation of fifty years' service to his Company and to the Gas Industry Mr. STEPHEN SIMPSON, Chairman of Willey & Co., Ltd., was presented with his portrait in oils at the Exeter works on Sept. 27. The presentation was made by Mr. J. Matthews, manager of the machine shop, who had been associated with Mr. Simpson throughout the half century, and speeches were also made by Mr. C. H. Hitchen, General Manager, and Mr. R. J. Rew, Deputy Mayor of Exeter and Chairman of the Devon Gas Association.

Letter to the Editor

Complete Gasification

DEAR SIR,—I am much impressed by Mr. Masterman's letters and to learn from him that I am preaching to the converted, but he does not give any indication of the extent to which the preacher's teachings have been put into practice by the converted during, say, the last 25 years or so.

Mr. Masterman must forgive me for my inability to agree with him in regard to his principal statements, which, though a little involved, I interpret fairly well—not being quite an ordinary reader on this subject.

I trust my letter was clear to Mr. Masterman and its text understood to be the complete gasification of coal in one stage, thereby obviating the production of coke and preferably any necessary second processing of it to make gas—the main objective being to increase the yield of therms per ton of coal to the utmost. Any increase is better than none. Blue water gas per ton of coke yields 140 therms; coal producer gas 202½; coke producer gas 202½; and so on. Even so, on what grounds he imagines considerable extra costs (which I have omitted) arise with increased makes due to the gasification of coke I do not at present follow. To what research work Mr. Masterman refers as having been done or in hand I do not know but am more than willing to learn of the results of it for, say, the last 20 years. We have before us (published recently) a definite case of the results from processing 128,000 tons of coal per annum, resulting in 67½ therms in gas, 9½ cwts. of coke, and the usual tar per ton. I agree the ratio of gas to coke is all-important.

Is it not high time the Gas Industry acknowledged unreservedly that the average result of 67½ gas therms per ton from the processing of 128,000 tons of coal could be increased by substantially three times 67½ gas therms, and the cost of gas for coal alone be brought down in accordance with that increased yield per ton of coal? The Gas Industry having first acknowledged this fact as I have stated it again could then, without committing itself in any way, tell us what its proposals are. Such an acknowledgment would help the Industry immensely.

Few men indeed are able as Mr. Masterman to disentangle the toils which hinder progress towards that destiny of our great Industry to which we all realize it is entitled. May he continue to pursue this objective!

Yours, &c.,

Sept. 28, 1944. GEORGE HELPS.

P.S.—One word more:—Nuneaton is the place where lower grade gas ideas were born and is their home, and it is doubtless for this reason that Nuneaton is always so well represented at Gas Councils and other like meetings which take place frequently on the subject.

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William Cartwright Holmes Scholarship

The Senate of the University of Leeds, on the recommendation of the William Cartwright Holmes Scholarship in Gas Engineering Committee of The Institution of Gas Engineers, has awarded the Scholarship to Mr. G. F. I. Roberts (Hereford).

The fact that goods made of raw materials in short supply owing to war conditions are advertised in the "Journal" should not be taken as an indication that they are necessarily available for export.

Diary

Oct. 6.—Junior Institution of Engineers: Informal Meeting, 39, Victoria Street, S.W. 1, 6.30 p.m.

Oct. 7.—Yorkshire Junior Gas Association: Annual Meeting, Great Northern Hotel, Leeds, 2.30 p.m.

Oct. 10.—Central Committee of the Federation of Gas Employers: Gas Industry House, 11.30 a.m.

Oct. 10.—Central Executive Board of the National Gas Council: Gas Industry House, 1.30 p.m.

Oct. 10.—National Federation of Gas Coke Associations: General Committee, Gas Industry House, 10 a.m.

Oct. 10.—Illuminating Engineering Society: Opening Sessional Meeting, E.L.M.A. Lighting Service Bureau, 2, Savoy Hill, W.C. 2.

Oct. 11.—Southern Association of Gas Engineers and Managers: General Committee, 11.30 a.m.; Autumn Meeting, 2.30 p.m.; Grosvenor House, Park Lane, London.

Oct. 12.—Institute of Fuel: Annual Luncheon, Connaught Rooms, 1 p.m. Presidential Address by Dr. E. W. Smith, C.B.E., followed by Melchett Lecture by Dr. J. G. King, O.B.E., 2.15 p.m.

Oct. 16.—London and Counties Coke Association: Finance Committee, 10.30 a.m.; Executive Committee, 11 a.m.; Central Committee, 12 noon; Annual Luncheon, 1.0 for 1.15 p.m.; Annual General Meeting, 2.45 p.m.; Grosvenor House, Park Lane, W. 1.

Oct. 17.—B.G.F. Domestic Heat Services Committee: Gas Industry House, 2.30 p.m.

Oct. 27.—Manchester District Association of Gas Engineers: Autumn General Meeting.

Nov. 7.—Southern Association of Gas Engineers and Managers (Eastern District): Films, "Boiler House Practice" and "Steam Utilization"; discussion opened by Mr. W. H. Gamble; Gas Industry House, 2.30 p.m.

The Junior Gas Associations

Here is a written comment to the discussion on the Paper by Mr. H. Platt and Mr. A. Bujnowski to The Institution of Gas Engineers —see "JOURNAL" of June 21.

Mr. G. E. Currier (Bradford): It is certain that the concern of the Gas Industry for the training and development of its junior personnel is of more fundamental importance than its concern with the Junior Gas Associations. The successful post-war development of the Gas Industry is wholly conditioned by the type of juniors attracted to it, and the attitude of the Industry to them. No amount of concern with the Association formed by that personnel will permit of the realization of the immense possibilities of the Gas Industry as a fuel-processing industry unless the training and education of its juniors is wide and comprehensive.

At the present time qualifications, arduously achieved in the various sections of the Institution's Education Scheme, do not imply suitability for the remunerative posts of the Industry unless accompanied by external qualifications difficult to attain within the framework of the existing Education Scheme. In any reorganization of the Education Scheme with improvement of training facilities, some co-ordination with engineering and university bodies should be aimed at with a view to improving the recognizable status and qualifications of the candidate. Ample facilities for day lectures and training should readily be made available by all undertakings, since for the more advanced training the combination of work and evening class studies in general is too strenuous.

Institution scholarships, tenable at approved universities and available to successful candidates from each district gas area, would be very valuable and a great incentive. Improvement in, and extension of, educational facilities, coupled with reward commensurate with the occupational qualifications required, would automatically raise the status of the Junior Gas Association and ultimately that of the Gas Industry.

Dividend

The South-Western Gas and Water Corporation, Ltd., is paying, on Oct. 17, an interim dividend on the Ordinary Shares of 2% (actual) less income tax, in respect of the year ending Dec. 31, 1944.

The London Section of the British Association of Chemists have arranged for a public meeting to be held at the Wigmore Hall at 6.30 p.m. on Oct. 18, to discuss "The Safeguarding of Key Industries." Mr. Norman Sheldon, A.R.C.S., F.R.I.C., Chairman of the British Chemical Ware Association, will open the discussion by proposing a resolution urging the Government to give immediate and special consideration to the maintenance and development in Great Britain of those industries formerly covered by the Safeguarding of Industries Act (Part I).

Wales and Monmouthshire Association

A good attendance of members, a civic welcome by the Lord Mayor, and a keen discussion on post-war problems marked the general meeting of the Wales and Monmouthshire Association of Gas Engineers and Managers, held at the South Wales Institute of Engineers, Cardiff, on Sept. 28.

The President (Mr. D. Muir, Pontypridd) extended a hearty welcome to Mr. S. E. Whitehead, President of The Institution of Gas Engineers, Dr. E. W. Smith, President of the Institute of Fuel, Dr. W. T. K. Braunholtz, Secretary of the Institution, and other visitors, and also to the new members who were present for the first time.

Mr. S. E. Whitehead, in acknowledging the welcome, said the Institution was endeavouring to establish closer collaboration with the District Associations. A little time ago the gas engineers in Wales, through their Secretary, Mr. E. M. Edwards, offered to relieve those in the areas affected by flying bombs, and if the menace had continued he had no doubt they would have been glad to take advantage of the offer; nevertheless he wished to express appreciation of it. As Chairman of the Co-ordinating Committee of the Regional Gas Engineering Advisory Boards he also wished to thank South Wales, and particularly their Chairman and Secretary, for the work they had done, work which had been appreciated not only by the Co-ordinating Committee, but by the Ministry officials concerned. As Chairman of the Benevolent Fund he wanted to thank the Association for its generous gesture in sending £300 towards the capital of that fund in memory of the late Mr. Octavius Thomas. Their action was appreciated for two reasons, first because every penny was badly needed, and secondly because of the generous spirit behind the gift.

On the proposition of Mr. W. F. Edwards (Bridgend), seconded by Mr. I. G. Jenkins, the election of the following Associates was approved: J. Beech (Towyn); W. A. Harper (Sedgeley); A. F. Topley (Heronsgate); G. E. Corner (Disley, Cheshire); and A. Robertshaw (Farnham).

The Secretary (Mr. E. M. Edwards) read a letter from Mr. J. D. D. Evans, Chairman of the Merthyr Tydfil Gas Company, expressing the gratification of his fellow Directors and himself at the choice of Mr. W. T. Kenshole as President of the Association. Mr. Kenshole had done such excellent work not only for the Company but for the Gas Industry generally that it was a great pleasure to the Board to feel that he had been honoured in this way.

The retiring President, in introducing his successor, said Mr. Kenshole was a member of a very well-known family in the Industry, and his father before him had occupied the presidential chair. Since he came back from Lea Bridge he had taken an active part in their activities, and he was certain he would leave his hall-mark on the work of the Association.

The new President suitably responded, and said his first privilege and pleasure as President was to pay tribute to the manner in which Mr. Muir had presided over the affairs of the Association in the past year. Owing to the exigencies of the war, it was not possible to present him with the usual silver salver, but he asked his acceptance of a token presentation as a mark of their appreciation.

Mr. Walter Davies seconded the expression of thanks to the retiring President with the remark that he had done his work well.

Acknowledging the gift, Mr. Muir said his duties had been made much easier by the kind support of the members and the Council and the help of the hard-working Secretary.

Submitting the 34th annual report of the Special Purposes Section, the Secretary said much of the work originally dealt with by the section was now done by other bodies, particularly on coal, coke, and tar matters, and attention had already been drawn to the need for re-defining the objects and functions of the section. It was suggested that at the general meeting next September consideration should be given to the future work of the section, and that a decision should then be made as to the advantages or otherwise of continuing the section. The committee proposed to pay special attention to the education and training of young men entering and already in the various branches of the Industry, as this was considered to be of paramount importance. The membership now consisted of 10 local authorities and 23 companies.

The report was adopted on the motion of Mr. J. Powdrill, seconded by Mr. F. W. Croxton.

Mr. J. F. Rust (Newport) reported on the organization and work of the Regional Gas Engineering Advisory Board, of which he is Chairman, and stated that for the year ended Dec. 31, 1943, eight of the 91 undertakings in the region showed a thermal efficiency of over 75%, ten showed between 70 and 75%, 13 between 65 and 70%, and 60 under 65%. The monthly efficiency figures now showed in many cases a decided inprovement on these figures, but much work remained to be done. Progressive deterioration in the quality of coal, arrears of plant maintenance, and unsuitable and inefficient labour all had their effect on efficiency of operation; at the same time substantial improvement remained possible. There was a serious shortage of skilled technical supervision in many works, and if permanent substantial improvements in operating results were to be obtained there must be brought into being a much higher degree of technical control of plant. In the case of a number of the smaller undertakings it was suggested that it would be advantageous if a schem was introduced whereby those undertakings could obtain the regular services of travelling chemists and technicians.

In many small undertakings it was common to find plants at certain periods of the year being operated at a throughput of 60% of the normal. The high relative fuel consumption of idle plant was generally realized, but it was suggested that there was need for more flexible gas-making units for smaller undertakings, and the plants should have a low fuel consumption at low rates of throughput. The Board had also dealt with problems of steam raising, electricity generation, dilution of coal gas, routine inspections, and assistance in meeting heavy demands, and members were reminded that the services of the Board were readily available for the preparation of reports for submission to the Ministry when they contemplated plant alterations or extensions. Unaccounted-for gas represented the loss of large quantities of fuel, and engineers were urged to pay every attention to the urgent need for reducing this loss to the lowest level. All undertakings should be able to obtain sufficient supplies of materials and personnel for the proper maintenance of gasholders, mains, services, and meters. Appreciation was expressed of the co-operation and assistance given by Major E. I. David, Regional Gas Officer; Mr. W. Clark Jackson, Gas Spokesman for Coal Supplies and Regional Gas Engineering Adviser; Mr. D. Hicks, Coal Survey Laboratory of the D.S.I.R.; and Dr. W. T. K. Braunholtz, Secretary of The Institution of Gas Engineers.

Mr. J. Powdrill (Pontypool) remarked that the matter of coal quality was very important, and if they did not pursue this question they would not be doing their duty either to their coke consumers or to the Industry. With regard to unaccounted-for gas, the members would remember that at Mr. Muir's request he gave a Paper last year on the subject. From about 20% in 1942 the unaccounted-for gas in his area had been reduced to 8.26% in the June quarter this year, which gave a very considerable overall efficiency.

Mr. W. Clark Jackson (Neath) said there was no doubt that they were not getting anything like as clean coal as they could get if they had the co-operation of the collieries. Quite recently one of their members brought to his notice a reply he had received to a complaint which he had made to a colliery, and the reply was so astounding that they sent it to London, where the matter was being taken up with the Mines Department, and he hoped it would be pursued to the bitter end. At the same time he wanted to assure everyone that so far as was humanly possible the better quality coals were being shared round among everyone, and no influences were being brought to bear on the delivery of better coal to some people than others were getting. There was no question that after the war the Industry would require to set up a standard of coal quality, and would, of course, have to pay for that improved standard, but surely it was far better for them to get the better quality coal and leave the rubbish behind for the colliery tips, rather than transport it to their works and go through all the difficulties they experienced on their works. He heartily agreed with most of the remarks in the report. There was nothing like a little bit of competition with one's neighbours. If one's neighbour was getting a better efficiency, and conditions were reasonably similar, then competition stepped in, and there was a natural incentive to do better. They were not up to the standard of some of the other districts, but he was sûre that if some of the other districts had their coal to handle they would probably tell a different story. One weakness was the recalcitrant member who would not give any co-operation whatever. They had not many such members, but the few there were were letting the Industry down. He wondered whether the President of the Institution or Dr. Smith could give them any idea how to bring a little pressure to bear on the non-co-operating undertaking. He had his own views on how it could be done, but whether they would work or not he did not know.

Dr. E. W. Smith said he felt he ought to congratulate the district on the way it was working out the spirit and the ideas that prompted the formation of the Gas Engineering Advisory Boards. He had been out of the picture for two years, but if he had still been in the Ministry, as soon as attention was drawn to such matters as Mr. Clark Jackson had raised they would have sent an order down to the works requesting them to do certain things, not because it was necessary to boss them or to order an undertaking how to run its works, but because they would have to give such statistics and information as would satisfy them that they were running efficiently. That was quite within the power of the Ministry, and he thought that if a request were made from their Board to the Ministry that they should give their advice as to how the matter should be dealt with they would probably deal with it in that way. It would not be within their power to do it except under war conditions. Under war conditions everyone was committed to fuel economy. He suggested that they should not press the question of competition between one undertaking and another, because it was very difficult to be fair in comparing one with another. There were no two works exactly alike in their conditions. The proper thing to do was to get data from the works and to indicate, as a committee, what they believed to be reasonable practice based on that data, and give them a datum line as an object of competition. It would make for better feeling than by encouraging competition between works. The White Paper published earlier in the week was to his mind a marvellous step forward in every direction for the good of the community, but it was fundamental, if the scheme was ever going to be a success, that the worker, whether in collar and cuffs or with spade and shovel, should pull his weight. The whole thing would collapse if there was a lack of co-operation or a lack of interest

in the undertaking for which they were working, and so on. He did not see much future for this country unless there was a greater spirit of unity in any organization in which people were working, a spirit of co-operation and co-partnership. The main trouble was in the type of leadership given, not necessarily from the managing director, but from those who had charge of anyone, however small their responsibilities might be. He believed that gas engineers, and the Institution, were pulling their weight splendidly in the Gas Industry, but the future of the Industry in his view depended to a very great degree on wise administration, as distinct from technique. On the technical side gas engineers were a long way in front of the administrators.

The Secretary quoted a number of individual undertakings where substantial improvements in thermal efficiencies had been achieved. In one instance where a technical assistant had been sent to a works the efficiency had been raised 10% in ten days, but within four weeks after he had left it slipped back again to the original figure.

Mr. S. E. Whitehead said it was heartening to him as Chairman of the Co-ordinating Committee to hear the figures quoted by the Secretary, which showed there had been definite savings in coal.

Invited to contribute to the discussion, Dr. W. T. K. Braunhlotz said there was little he could say on the technical side, but he assured the members of the very understanding way in which the Ministry officials dealt with many of the problems that arose from time to time.

Mr. Rust, replying to the discussion, said the attitude adopted by the Board was not so much to get every undertaking to reach a fixed efficiency figure, but to encourage even the smaller undertakings to effect an improvement, if only to the extent of one half per cent. He would like to take that opportunity of saying how delighted they were to have their friends from North Wales with them that day. They had had a difficult time in the north and had done well in their smaller works, and he would like to say how much the Board had appreciated their help in this matter.

On the proposition of the President, a vote of thanks was accorded to Mr. Rust and the Secretary for their report.

Mr. Rust was elected by the meeting to fill a vacancy on the Salaries Committee of the Institution.

Mr. W. Clark Jackson suggested that a small sub-committee might be appointed to consider the question of salaries, and the President replied that a committee had already been set up to look after that matter.

At the luncheon at the Park Hotel, the toast of "The City and Prosperity of Cardiff" was proposed by Mr. S. E. Whitehead, and responded to by the Lord Mayor, Alderman Frederick Jones, who warmly welcomed the Association to the historic city. Dr. E. W. Smith proposed the toast of "The Wales and Monmouthshire Association of Gas Engineers and Managers." The President, in his response, said the Gas Industry had an important part to play in the industrial world where, for certain operations, gas had proved supreme, not because it was cheaper per therm than other fuel, but because the job was done better as the result of the control of combustion and the provision of suitable furnace atmospheres. It would also have an important part to play in the domestic world where, in the new homes, life was to be made easier by the provision of clean and reasonably priced fuel.

In the afternoon a Paper on "Area Gas Supply," presented by Mr. W. Hodkinson and Mr. H. B. Taylor, of the United Kingdom Gas Corporation, provoked a keen discussion, culminating in the passing of the following resolutions: "That this meeting of the Wales and Monmouthshire Association of Gas Engineers and Managers resolves that the Post-War Planning Committee for South Wales and the South Wales District Executive Board of the National Gas Council be requested immediately to consider the convening of a meeting of all the representative bodies of the Gas Industry in the area, to consider the submission of an application to the Minister of Fuel and Power to set up at once a committee of enquiry upon the possible development of bulk gas making and transmission in the South Wales and Monmouth area"; and "That this body is of the opinion that the Post-War Planning Committee should seek from the bodies forming it an addition to its terms of reference to the effect that it should seek to obtain for any grid scheme which may be put forward the support of industry generally in the district."

The Following Resolution has been passed by the Industrial Research Committee of the Federation of British Industries: This Committee notes with the greatest satisfaction the generous and inspiring example created by I.C.I., Ltd., in providing 80 post-graduate research fellowships tenable at the principal Universities, and expresses the hope that this example will be followed by all the major industries as one of the most effective means of providing research facilities and staff, on which the future well-being of British industry so largely depends.

A Joint Committee of the Derbyshire and Nottinghamshire County Councils and the Nottingham City Council has drawn up a scheme whereby there will be transferred to those bodies the technical education functions hitherto exercised by Nottingham University College at buildings belonging to the City Council. This scheme will involve the establishment of a technical college.

The Next Meeting of the Southern Association of Gas Engineers and Managers (Eastern District) will be held at Gas Industry House on Nov. 7, when Mr. W. H. Gamble will open a discussion after the showing of two films entitled "Boiler House Practice" and "Steam Utilization."

A Post-War "Metro" Coke Grate

The "Metro" coke grate has been deservedly popular for many years among those who like a smokeless fuel. This grate is claimed by the makers to have been the first to be put on the market to burn gas coke satisfactorily. In the booklet, "The Solid Products of Carbonization," published by the South Metropolitan Gas Company in 1934, it was laid down that "a carbonized solid fuel to be used in the place of coal in existing open fires must be produced at temperatures below 700° C. . . . Naturally the effect of the high selling price must be to limit sales in the early days of such a project, and until the advantages of the new fuel become generally appreciated the replacement of coal by low-temperature coke must be a very gradual one. Moreover, the necessary changes in methods of gas manufacture could not be effected in a short space of time. . . . Consequently, it became necessary to consider the other alternative, namely, the design and supply of apparatus suitable for burning high-temperature coke."

The principles at that time deemed necessary for a successful open grate to burn gas coke were (1) care to prevent the temperature of the fuel falling below the ignition temperature, the grate being therefore made to hold a larger amount of fuel than usual with coal fires; (2) more satisfactory insulation than was then found in the majority of existing grates, to assist in keeping the temperature of the coke sufficiently high and to prevent the "unpleasant appearance" of a dully burning zone against the sides and the back of the grate; (3) special arrangements for preventing the accumulation of ash on the firebars; (4) gas ignition to avoid the difficulty of slow ignition with paper and sticks.

The "Metro" grate had already been on the market for some years when this report was published, and experience showed that its design, and consequently the principle on which it was based, was satisfactory. The fire was standardized and made with complete interchangeability of parts.

As a result of extended experience it has been found possible to incorporate technical features which simplify the management of the fire, and at the same time the external appearance and finish have been greatly improved. The intake of air is controlled by sliding dampers. These dampers or shutters are fitted on a ventilator plate. They are adjusted as required by the user according to the amount of heat he needs, and their position is clearly visible at all times. The ventilator control is positive and simple, the plate sliding easily into position; no special tools or fittings are needed. With this form of ventilator the fire can be lighted and the ash raked through the bars without removing the front plate. Moreover, the air is admitted to the underside of the grate in such a way that it is readily distributed over its whole surface.

Gas ignition is provided, the gas being required for no longer than 15 to 20 minutes according to the type of coke being used, and to whether the grate has been recently alight or not. The frame and the bars of the grate are adjustable to meet variations in fire-brick dimensions. The front is well balanced so that the fitter can readily set the fire level, and splay peg fixing at the back prevents the fire from riding forward. Concealed and open gas connexions can be made equally conveniently. The open connexion can be on the right- or left-hand side and can be neatly swept round the curve of a bull-nose surround.

Deflectors collect the ash from the sides of the fire and spill it into the ash-pan. The ash-pan is of such a size that it needs to be emptied only once a day.

The fire is, for the present, made in one size only, and is suitable for fireplace openings 16 in. wide. The frame of the fire and the firebars are adjustable to suit the following widths and depths of firebrick:

	Minimum.	*Maximum.*
Width across the front . .	13 in.	15 in.
Width across the back . .	7½ in.	10¾ in.
Depth from back to front . .	6¾ in.	8 in.

Particular features claimed for this fire are flexibility and control over the rate of heating.

This grate is a product of the combined experience of the South Metropolitan Gas Company, and the manufacturers, Sidney Flavel & Co., Ltd.

The Annual General Meeting of the British Standards Institution, which was postponed on July 18, will be held at the Institution of Mechanical Engineers, Great George Street, S.W. 1, on Oct. 17, at 2.30 p.m., with Sir Percy Ashley, K.B.E., C.B., in the chair. The business of the meeting will be to elect members to the General Council, to receive the Accounts, to appoint Auditors and fix their remuneration, and to approve the revision of the By-laws.

The Leamington Priors Gas Company's Division of the St. John Ambulance Brigade recently gave a demonstration of their first-aid and rescue work before a large gathering of county officers of the Brigade. Supt. Badger gave a description and an explanation of the various appliances which were to be used, and the programme arranged by him consisted of a number of incidents designed to show the use of special apparatus when working in places where there might be an accumulation of gases or where repairs or rescue might have to be undertaken in a gas-laden atmosphere. The incidents, as staged, represented events which might occur in ordinary gas-works routine.

Gas in Government Demonstration Houses

There are to be seen at Northolt a number of demonstration houses which are the result of investigation and experiment into the ways of overcoming the housing shortage. Mr. George Hicks, Parliamentary Secretary of the Ministry of Works, claimed last week that these showed that the Ministry had made an important contribution towards dealing with this crucial problem.

The houses fall into two main categories. There are those of traditional construction, such as brick, but because of expected shortages in certain materials and certain classes of craftsmen, it was decided that these should not delay the building of permanent houses, and less known but proven materials and new methods of construction were also employed. A record has been kept of the comparative costs of the various methods of construction and the uses of alternative materials. Local authorities are being invited to inspect these types with a view to providing for their own requirements expeditiously.

The important contribution made by the Gas Industry to post-war housing plans is represented by the equipment installed in most of these demonstration houses. The examples of gas appliance on view in these Northolt houses have been chosen as demonstrating the service which gas can now offer for the lower-rental home—as demonstrating that warmth, constant hot water, refrigeration, and well planned cooking equipment are within the reach of all.

Of the two brick-terraced houses equipped throughout by the Gas Industry, one is an all-gas house ; the other combines gas and coke. Both illustrate the advantages of a smoke-free labour-saving service for cooking, heating, refrigeration, water-heating, and home laundry, at a cost so moderate as to be well within the means of tenants of the lower-income groups.

The Gas and Coke House

Living-Room.—This room is heated by an open coke grate, gas ignited. When the fire is banked-up and the damper closed it burns approximately 1 lb. of coke per hour and lasts for a period of six hours without refuelling, keeping the room at a comfortable and even temperature. On colder days the damper can be opened, giving a clear-burning hot fire, but even then it consumes only 1¾ lb. of coke per hour, and does not require making-up more frequently than once in three hours.

Kitchen.—The coke boiler, which heats the dining annexe, also supplies hot water to sink, bath, and lavatory basin. Connected to the boiler is a gas circulator, used to heat the water in summer for baths when the coke boiler is not lighted. Ventilation in this, and in every habitable room in the house, is assured by means of a flue, whether the various appliances are in operation or not. Along one wall of the kitchen is a gas cooker, with hotplate fitted beside the oven. Next to it is the sink, with double draining board, and small recessed instantaneous gas water-heater, providing an independent hot water supply for washing-up when necessary. This system makes for fuel economy, as well as for added convenience, since in summer the circulator need only be lighted when hot water is required in large quantities for baths. A cupboard, conveniently placed under one of the draining boards, contains the portable gas wash-boiler, to which a wringer can be attached. When required this is pulled out on smooth-running castors and placed alongside the sink. On the opposite wall is a gas-operated refrigerator, built-in at a convenient height, with cupboards above and below, a draw-leaf table, and a store cupboard. A flush plug-in point is provided for a gas iron and other portable appliances.

Hall.—Opposite the foot of the stairs is a recess with a gas-heater for background heating. A cupboard near the front door houses the gas and electric meters.

Bedrooms.—The largest bedroom is fitted with a hearth gas fire and the two others with wall panel gas fires. All the bedrooms have built-in cupboards, and the linen cupboard in one of them is heated from the hot storage tank. A flush plug-in point is provided in each bedroom for a gas boiling ring.

The All-Gas House

In this house no solid fuel of any kind is used, and it is therefore even more labour-saving than the gas and coke house. In the living-room and dining annexe are gas fires of a new type. Designed for long period heating this fire gives out both radiant heat and warmed air. Its running cost is lower than that of an ordinary gas fire, because of its higher efficiency. It is very flexible, and can be operated at a third of its full capacity without detracting from its appearance.

Kitchen.—One wall of the kitchen is occupied by the gas cooker and sink with double draining boards. The gas-heated washing machine is stored in a cupboard beneath one of the draining boards when not in use. On the wall to the left of the cooker, adjoining the dining annexe, is a cased-in multipoint instantaneous gas water heater, which supplies hot water to sink, bath, and lavatory basin. On the opposite side of the kitchen is a gas refrigerator, and a flush plug-in point is provided for a gas iron.

Hall.—This is similar to that of the gas and coke house, and contains a recess for gas background heater.

Bedrooms.—The largest bedroom has a hearth gas fire; the others wall panel fires. The linen cupboard in bedroom 2 is fitted with a small gas heater, which can be lighted when required for airing purposes. In each bedroom is a flush plug-in gas point for a gas boiling ring.

The Ministry of Works is making extensive use of gas and coke equipment in these Northolt demonstration houses. A complete list follows:

Type "C."—2 Brick Houses; 2 Basic Foam Slag Houses; 2 Steel Frame Houses; 2 No Fines Concrete Houses; 2 Expanded Clay Houses.

In each house: 1 gas copper, 1 gas sink water heater (in kitchen); 1 independent coke boiler in dining recess, with flush point for gas poker; 1 flush point in living-room near fireplace for gas poker or for portable gas heater; 1 point for installation of permanent gas fire in living-room if desired; 1 point for gas refrigerator near cupboard in kitchen.

In one house out of each pair: 1 gas cooker in kitchen.

Dudley Rural Houses (2).—Solid fuel equipment is provided in the houses, but gas points are provided for the following gas equipment: Kitchen—cooker and copper; living-room—fire; bedrooms 1 and 2—fires; bathroom—water-heater.

Silkin Phase I (2 flats).—In each flat: 1 independent coke boiler for water heating, with point for gas poker; 1 gas cooker; 1 gas copper; 1 gas sink heater; 1 flush point near living-room grate for gas poker or portable gas heater. Gas points are also provided for the installation of a gas water heater in the bathroom and a gas fire in the bedroom if desired.

Silkin Phase II (house).—1 independent coke boiler for water heating, with point for gas poker; 1 gas copper; 1 gas sink heater; 1 flush point in living-room for gas poker and point for permanent gas fire if desired; 1 point for gas fire in front bedroom; 1 point for gas water heater in bathroom.

Dudley Urban Houses (2).—In each house: 1 independent coke boiler, with gas poker; 1 gas copper; 1 gas sink heater; 1 flush gas point for poker or portable fire in living-room; 1 gas point for fire in best bedroom if desired; 1 gas point in bathroom for water heater.

In one house: Gas cooker in kitchen.

Kenyon Houses (2).—In each house: 1 gas copper; 1 gas sink water heater; 1 flush point for gas poker, with slow combustion stove or portable gas heater in living-room; 1 point for water heater in bathroom. In one house: Gas cooker in kitchen.

British Iron and Steel Federation Houses (2).—These houses are piped for gas and points have been provided in each house for gas cooker, gas copper, poker for lighting slow combustion stove, gas fire in living-room, water heater in bathroom, gas fires in bedrooms No. 1 and 2. Installed in one of the houses are a gas cooker, gas copper, and a panel gas fire.

Prefabricated Flats (4 flats—2 completed).—In each of the two flats: Gas cooker, gas copper, gas refrigerator. (Hot water is supplied in these flats from the slow combustion stove in the living-room.)

The gas equipment in the terraced houses equipped by the Gas Industry has been detailed.

Code for Heating and Heat Insulation

A draft Code of Practice for Heating and Heat Insulation has been issued for comment by the Codes of Practice Committee of the Ministry of Works. It is one of the series of ten codes dealing with the functional requirements of buildings. The objects of this code are to define desirable standards of heating in buildings, and to indicate the methods in the heat insulation of the building shell by which these standards can be economically attained.

In the past it has been customary to spend money comparatively freely on fuel in order to make good any thermal deficiencies in buildings and in appliances supplying the heat. Although the larger heating installations have been designed and installed under skilled guidance, in many buildings it was not normally considered necessary to resort to design methods, either in the choice and installation of the method of heating or in the reduction of heat losses by correct insulation of the building. There is a growing realization that the unnecessary use of fuel wastes a vital national asset, and that it is more expensive to the occupant of a building to burn fuel at a high rate than to insulate the building.

Comfort, heat losses, degrees of exposure, solar heat, and cognate matters are discussed, and there is an Appendix on heat transmission, including examples of how to calculate the thermal transmittance of composite construction, with a Table of conductivity values of various insulation materials.

Appendix B describes a graphical method of estimating the desirable amount of insulation for parts of buildings having regard, *inter alia*, to the cost of fuel and of heating plant and its installation. A chart is provided for determining the amount of thermal insulation which is economically justifiable in any part of a building.

There is also an Appendix containing Tables for temperatures obtained in roof structures in summer and reflection co-efficients of building materials for solar radiation. A further Appendix contains notes on "Equivalent Temperature" and its measurement.

The Directors of Messrs. Newton Chambers & Co., Ltd., have invited the Midland Junior Gas Association to visit the firm's ironworks at Thorncliffe, near Sheffield, on Oct. 10.

Area Gas Supply*

By W. HODKINSON and H. B. TAYLOR, United Kingdom Gas Corporation

Introduction

THE past five years of war have undoubtedly brought to official circles, and indeed to the general public, a deep realization of the paramount importance of the fuel industries to the effective operation of a national wartime policy. There are signs to indicate that this appreciation will extend into the days of our national peace-time economy. The Gas Industry will undoubtedly play an important part in the reconstruction of the nation's industry, and to facilitate post-war development in the export markets we must place ourselves in a position to meet the demands of industry for an efficient and economic heat service. At the present time the Gas Industry ranks second only to coal in importance as the supplier of domestic heat requirements in this country; in the post-war era gas and coke are the obvious solution to the smoke abatement problem, and are the only two fuels capable of meeting the demand for a complete smokeless domestic heat service at economic rates. There is a growing opinion within the Industry that our products can attain the predominant position in the domestic heating field, provided we plan for the future on a sound basis, attain universally the maximum efficiency of our carbonizing process, and adopt a forceful marketing policy based, not on the sale of gas or on the sale of appliances, but on the sale of a clean and efficient heat service.

In this Paper we endeavour to examine in some detail one of the possibilities open to the Industry in certain areas whereby increased efficiency, both technical and economic, may be attained by centralization of manufacture and bulk distribution over wide areas. From time to time the subject of Area Gas Supply has received consideration in committee and in the technical Press; it is perhaps unfortunate that on each occasion the subject has been linked up exclusively with the collection and distribution of surplus coke oven gas. In our opinion the scope of the Area Gas Supply can with advantage be extended by reorganization of the Industry into large manufacturing units and the adoption of high-pressure distribution over wide areas. This opinion is based upon experience gained in the operation of the West Yorkshire Gas Distribution Company, which undertaking is operating some 90 miles of high-pressure distribution mains and meeting the demands for town gas over an area of 600 square miles. It is perhaps interesting to note that this important development in both local and regional planning was only made possible through the acquisition policy of a holding company, the United Kingdom Gas Corporation Ltd., under the direction of Colonel W. M. Carr, of which Company the authors are executive officers.

The Need for Centralization of Production

Investigation has repeatedly confirmed that size of works is not, in itself, a criterion of technical efficiency; indeed, the authors are familiar with several relatively small works which are at present operating at a higher thermal efficiency than many large works. Ten years ago it was true to say that such small works could produce gas into holder as cheaply as, if not more cheaper than, the larger works referred to. Rising costs of labour and materials, particularly the former, have reacted to a greater degree against the small works than the large unit, so that the picture has completely changed. To-day even the most efficient small works can generally not be considered economic.

The factors affecting the small works may perhaps be cited as follows:

(*a*) Output per unit of labour.

(*b*) Cost of operating proportionately large parts of the plant as standby.

(*c*) Lack of skilled technical control.

Table I sets out the details of retort house staffing on works of varying size and the tonnage of coal carbonized per man on the maximum capacity of the plant. It will be realized that at times of minimum demand the reaction is, if anything, against the small unit owing to the need for a minimum complement of labour to operate the house. Coke handling, exhauster, and boiler house staffing are included to attain true comparison with the smaller works where such duties are carried out by stokers.

TABLE I.

Coal handled per max. day (tons):—	8.	15.	40.	96.	157.	250.
Number of men:						
Coal handling ...	1	1	1	1	2	2
Carbonizing ...	3	4	6	6	9	12
Coke handling ...	—	—	1	2	3	4
Exhausters and boilers	—	—	3	3	3	6
Total men per diem ...	4	5	11	12	17	24
Tons of coal per man	2.0	3.0	3.6	8.0	9.2	10.0

In view of the opening paragraph of this section some explanation of (*c*) may be considered necessary. Prior to the introduction of the Coal Sales Scheme it was possible to select the most suitable coals for carbonization, and to obtain relatively high thermal efficiencies from rich coals with comparatively little skilled technical control. It must also be admitted that in many districts the more suitable coal measures have been largely depleted. Having regard to these points, it appears obvious that in the future skilled technical control will be of increasing importance to the production of maximum efficiencies from coals of relatively inferior quality.

It is likely that for some years to come the Industry will continue to produce two fuels, and with high initial coal costs it will be vitally necessary to the economics of the carbonizing process to secure a stable market and a reasonable price for coke. To achieve this object it appears obvious that it will be of advantage to the Industry to develop a dual fuel load in the domestic field. This can only be attained by the most careful attention to the preparation of our solid smokeless fuel, coke. It is suggested that this can be done most efficiently, and at the lowest possible cost, on large units of plant and under skilled technical control. The day has passed when the gas undertaking could make profit out of selling to the coke consumer inferior fuel with high moisture content and little attention to correct grading. Care in the preparation of coke for the market and in attention to coke consumer service must at least equal our efforts in this direction in the development of gas service. The advantages of the domestic coke market are obvious from the point of view of stability in demand and price; we are all only too familiar with the effect of slumped coke markets, and the stability of the average coke market as compared with that of the domestic house coal market is worthy of consideration.

The economy of a small undertaking is quite often dependent upon a limited diversity of industry within its area; adverse trade conditions within the area can and do affect the costs of production due to lost load and consequent idle capital. Centralization of production with bulk distribution over wide areas spreads this risk by increasing the diversity of industries and load application. Temporary slumps in one industry are quite often offset by improved trade in some other industry. By spreading the diversity of industry and load application, it is possible to achieve considerable improvement in the average weekly load factor on centralized production plants.

Centralization of Production in South Wales

The foregoing remarks apply generally to many parts of the country, but to none more than South Wales. It is interesting to note that over 30 years ago the Rhymney and Aber Gas Company, in conjunction with the Powell Duffryn Company, pioneered the first step in this direction, distributing coke oven gas at high pressures throughout the Rhymney Valley and shutting down five small works. Their example has since been followed by several more individual undertakings, both privately and municipally owned, two of the latter purchasing gas from the Rhymney Company. It may also be noted that the United Kingdom Gas Corporation's policy in South Wales has been directed towards furthering this form of rationalization and, in the immediate pre-war years, was sufficiently advanced to enable plans to be prepared for effecting, as a first step, bulk supplies of gas to their other undertakings adjacent to the Rhymney Company. Unfortunately the war intervened before work could be commenced.

Early in 1942, in view of the pressing need for additional gas supplies in a number of undertakings in the Valleys, these plans were revived. It was then clear to the U.K., in the light of experience of development on the West Yorkshire Gas Grid, that any scheme developed to serve the undertakings under their control and those in the immediate vicinity should be such as would fit in to any major scheme designed to serve the industrial area of South Wales as a whole. During 1942 much preliminary work was done in the preparation of a minor scheme to serve our companies which, in turn, involved the consideration of a major scheme for industrialized South Wales, and culminated with the circulation of a memorandum, prepared by Colonel Carr, early in 1943 to many interested parties, including the Post-War Planning Committee of this Association, by whom it was adopted as a basis of discussion. The Authors are indebted to Colonel Carr and the Committee for permission to draw largely upon this work in parts of this Paper.

Out of 38 gas undertakings in or near the industrial areas of Glamorgan and Monmouthshire, making or buying in 1939, 5,912 million cu.ft., only 12 purchased coke oven gas totalling 1,705 million cu.ft., or approximately 30%. While the number of undertakings purchasing coke oven gas has not increased since 1939, the quantity of gas so utilized is now approximately 3,000 million cu.ft. per year—an increase of 75% over pre-war. Nearly all surplus gas under present conditions is now absorbed. However, if the weight of coal at present carbonized in coke ovens in the area, other than three plants operated primarily for steelworks purposes, is maintained, and if all obsolete batteries were replaced by modern types of compound ovens, not necessarily on the same sites, sufficient coke oven gas could be made available to enable all the 38 undertakings in the area to be shut down, and there would remain sufficient surplus to meet a 40% increase on 1939 town gas requirements. If the weight of coal now carbonized in gas-works was diverted to new coke ovens and added to

* A Paper to the Wales and Monmouthshire Association of Gas Engineers and Managers, Sept. 28, 1944.

the above, the surplus gas would be increased to 80% of 1939 requirements.

Put differently, this means that the whole of the 1939 town gas requirements in the area (6,000 million cu.ft.) could have been met from the weight of coal actually carbonized in coke ovens in that year, with a direct saving of all coal carbonized in the gas-works during 1939, estimated at 250,000 tons. The waste of coal entailed in the present practice is apparent, and points to the urgent necessity in this area for a rational system of pithead carbonization and the bulk distribution of town gas. It is, however, also necessary to ensure that such a system is economically sound, and to this end a tentative scheme for centralized manufacture and bulk distribution has been prepared and costed out. From this, conservative estimates of the cost of gas into undertakings' holders are obtained for comparison with the cost when manufactured at their works. If the average cost of gas delivered under the scheme is less than the weighted average cost of gas manufactured in the various gas-works, then the scheme is economic. Many of the existing gas-works and coke ovens will be in need of major reconstruction after the war. The time is thus opportune for detailed investigation into the advantages of such a scheme as that proposed.

(*To be continued*)

Internal Installation in the Post-War Home

Written contributions to the discussion on the Paper by Mr. R. N. Le Fevre to The Institution of Gas Engineers ("JOURNAL" of July 5) were made by the following:

Mr. **R. J. Rogers** (Parkinson Stove Company, Ltd.): The Author rightly asks why good gas installation practice should not be adopted as a national practice. Those of us who have devoted many years in endeavouring to improve the technique of gas installation work realize its true value to the Industry. There is no mystery or magic involved in the execution of first-class gas installation work. The recently-published report of the Gas Installations Committee outlines very clearly the manner in which various phases of installation work should be dealt with. In the first instance it is essential that every undertaking should possess properly-trained gasfitters, and what is possibly more important is that the standard of installation work adopted by the undertaking should be a good one.

The Author's investigation of the use of "compo" pipe is most interesting, and while it is well known that some undertakings to-day still retain the use of "compo" for internal installation work, I am in entire agreement with him in his condemnation of this type of pipe for installation in homes of the future. The Author's reference to the use of lead and "compo" pipe for meter connexions involves the consideration of certain modifications in the construction of the gas meter, if lead and "compo" are to be replaced by a rigid metal bar connexion. Provided such amendments are made to the meter, there is no reason why properly-designed standard bar connexions should not be adopted for gas meters, and their adoption, as the Author points out, would have many advantages. This is a question which I think could very usefully be further considered by the Meters Committee of The Institution of Gas Engineers.

Although the Gas Installations Committee has made recommendations for the correct housing of meters in small houses and flats, the carrying into practice of these recommendations will depend very largely on the degree of collaboration established between the planner of the house and the representatives of the gas undertakings. In this connexion too much stress cannot be laid on the importance of the designer of this class of property being contacted by the undertaking's representative at the earliest possible moment, to ensure that suitable provision is made in the plans for the housing of the gas meter. Too often the position of the meter has been an after-thought, and everyone is fully aware of the unsuitable position in which gas meters, particularly of the prepayment type, have been installed in houses in the past.

The Author, in his plea for greater consideration being given to the planning of internal pipe runs, refers to the unsightly connexions which are frequently seen leading to gas fires. A great deal of thought, effort, and expense is incurred in designing gas fires to fit harmoniously into various grate settings, and frequently the whole of this effort is marred by the manner in which the unsightly gas supply pipe is laid to the fire. If a little forethought were given to such installations, the unsightly connexions could be avoided.

Too much emphasis cannot be given to the Author's statement that the provision of a common high standard of gas installation practice is a national problem. To achieve this it is necessary that the management of all gas undertakings should take steps to see that the recommendations of the Gas Installations Committee are carried into effect on their districts. This should not be in any way difficult, provided, as I have previously stated, that the undertaking possesses well-trained gasfitters. In the immediate post-war years it may be necessary for some system of intensive training for gasfitters to be set up in order that those partially trained gasfitters who are now serving their country in the Forces may be provided with facilities for completing their practical and theoretical training. Such a school was provided and staffed with competent teachers immediately following the last war for training gasfitters returning from acting service who were employees of the Birmingham Gas Undertaking. I suggest that in each region of the country the Domestic Gas Advisory Centres should give immediate consideration to this question of training of gasfitters, with a view to deciding upon the best means of training fitters for their area. Realization of the importance of the gasfitter's work in the circle of service to the consumer will, I think, ensure that this question is fully considered without delay, so that adequate arrangements are made for dealing with the training of the men returning from the forces on the termination of hostilities.

Mr. **L. H. Pinkess** (Evered & Co., Ltd.): The ease and effectiveness of standardization, whether of a product or of a procedure, depends very largely on its application at the correct stage of development. A standard set up too early will repress or will be outgrown by progress. Too late an attempt involves surmounting the obstacles of entrenched muddle. Mr. Le Fevre's Paper shows that because the standardization idea grew up long after the Gas Industry was well established, the difficulties are mostly due to a late application of the idea. Thus, we have district practices which differ as much due to parochial prejudices as to local needs. Moreover, manufacturers have capital sunk in plans and tools for producing articles which show differences without distinction. We may hope with the Author that the post-war conditions may be met by an adequately standardized internal installation. The need will be there in the large programme of reconstruction and new building; the opportunity will be there, as large quantities justify the outlay in new plant for the production of standardized articles. And the break with the past which has been caused by the war, and our experience of co-operation during the war, should give us the will to make the necessary alterations.

Is it then too much to hope that the standardization of meter sizes will proceed from recommendation to achievement? Or that meter bars, or meter cupboards, can also be standardized and become a positive advertisement for gas service? Meter controls could be produced with flats of standard Whitworth sizes, to invite the use of standard spanners instead of shark-toothed pliers. They could be of standard overall length, and the number of types would be halved if users could agree to have either one or two "off" positions. Service governors might all have the same outlet pressure of, say, the 3 in. recommended as an adequate minimum by the Institution's Committee of Enquiry. A criterion could be devised which would determine when service governors were appropriate—for instance, a pressure drop under worst conditions of 0.5 in. to the most distant major appliance. A figure above this would indicate appliance governors, and below this a service governor.

It may appear that these are all matters of small importance compared with the large issues of policy which engage the major planning committees, but they should, nevertheless, be settled even at the cost of setting up further sub-committees, for it is attention to these practical details which ensures the smooth working out of general policies. They are the vitamins which ensure the proper assimilation by the public of the service which gas can supply.

Mr. **J. H. C. Bates** (Brighton, Hove, and Worthing Gas Company): In order to support the development of gas appliance sales a greater effort must be made to improve the methods of carrying out gas installations and the subsequent fitting and adjustment of gas appliances. This side of our business requires to be administered in like manner to other specialist branches of our work.

If the literal meaning of the terms "precision" and "neatness" are interpreted properly, a ripple will be felt in all parts of the installation business, ranging from the training of staff, the purchasing of tools and materials, and so on to the actual job of fitting. Precision, I feel, is the keynote, and the lack of precision must inevitably mean rule-of-thumb methods. The rule-of-thumb method is definitely not tolerated in the mechanical and other engineering trades. The "nearest ½ in." is not good enough, nor will a coat of paint be accepted to cover up indifferent workmanship. If gas undertakings are to continue with the installation of gas appliances, then all fitting and maintenance work must be of the highest standard in order to keep up with present-day requirements and competition.

A standard code of installation practice, with broad standards relating to types of tools, materials and fittings, would simplify procedure considerably, and would result in manufacturers being able to meet more effectively the demands made on them for these items.

The status of the gasfitter as such must be raised, and in this regard I would like to see a scheme for the classification of gasfitters organized throughout the country. The work of a gasfitter has to-day changed from that of years ago, inasmuch that gasfitters are now expected to have a specialist knowledge of water-heating work, industrial appliances, and numerous other items in advance of what hitherto was called gasfitting work. In regard to the term "gasfitter," this might well be changed so as to bring the trade, as such, into a more modern phase.

The problems of smaller undertakings are, of course, considerable in respect of the training of operatives, and unless there is a technical college near to hand where students can attend the gasfitting classes, the trade is usually learned entirely by practice on the district. While this method does give a considerable experience of working conditions, it does not entirely keep the operatives up to date with present-day practice. Old and out-of-date habits are very difficult to eliminate. An equipped Training and Testing Centre is provided by my Company to deal with the further education of the Company's sales and installation staffs. Such facilities organized by an undertaking must

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inevitably react favourably to it, and lead to a better understanding of what is required and a higher standard of workmanship all round.

In the Press of late many suggestions have been made regarding the setting up of Area Training and Discussion Centres for the training of gas installation staffs. Information has been given about the appointment by the Institution of a sub-committee charged to examine the problems relating to the rehabilitation of installation staffs after the war. To this end various data are, I understand, in course of collation as to the availability of staff training facilities offered by gas undertakings throughout the country. I am sure that this information would form the basis on which to set up such Area Centres as have already been mentioned. At these Centres installation operatives should be trained and facilities offered to those responsible for any form of installation supervisory work to hold regular meetings and discussions dealing with new methods of installation practice. Systems of training, types of tools, materials, and fittings are subjects that should be included in these discussions. Such methods as are agreed upon should be registered and made operative in the area concerned.

The meter bar referred to by Mr. Le Fevre should be developed generally as soon as possible. Meter fixing is an important feature of our business. In fact, lead bending and joint blowing are concentrated upon in most gasfitting training courses, and in no small measure does this part of the work represent meter fixing. It is apparent, therefore, that considerable effort is already being made to make meter fixing a first-class job with the materials at present available. The advent of the meter bar, together with standard sizes of meter, should, if all undertakings agree to introduce these features, represent a big step in one direction to nationalize small meter installation practice. The problem of installing the larger sizes of meter is not such a problem, as these meters have for some years now been made with flanged connexions which allow for screwed joints and rigid fixing. Precision of fixing is needed when using the bar. The flexibility of lead pipe allows for an adjustment to "the nearest ½ in.," whereas the meter bar does not. The fitting of the meter bar, as I see it, must be a co-operative job performed by the service pipe layers and installation fitters.

The type of meter control similar to that mentioned by Mr. Le Fevre is used on my Company's area of supply. In practice the service control cock is rarely used by the consumer. During emergency conditions, however, many consumers wished to turn off the gas supply at the service pipe but were unable to do so because the control cock plug had become fixed, due, no doubt, to the cock not having been used for some years. Fitters were sent out to ease and grease large numbers of these control cocks. Wheel valves have their shortcomings, but I would like to have further observations on this point, as I feel that other gas undertakings must also have experienced difficulties due to ineffective controls—a fact which rather negatives the purpose of a control cock, which, after all, is another factor of safety in installation practice.

If each individual gas appliance is fitted with an integral governor all adjustments are minimized. Complicated controls and adjustment devices can be eliminated. On my Company's area of supply the introduction of integral governors has shown good results. Gas cookers represent the main types of appliance fitted in this way, and experience has now been obtained from some 6,000 cookers fitted on the district. The deterioration of cooker component parts, such as burners, hotplate bars, and oven enamels has been minimized. This fact alone is an important feature, as it affects the various guarantee responsibilities given to cookers sold on hire-purchase terms. The cookers in question were supplied (at very little extra cost) with small constant pressure governors, and the burners with fixed aeration and injector orifices. The fitting of a governor to an appliance makes it independent of pressure conditions. Gas appliance burners operate at varying working pressures, and it would seem that a governor fitted integrally would meet this requirement. Very little trouble has been experienced on the district concerning the performance of these governors, and the cost of maintenance has proved negligible.

It is unfortunate that price fluctuations have impeded the development of copper tubing for gas installation work. The use of copper for the water supply pipes to heating appliances had in recent years become increasingly popular, particularly by contractors outside the Gas Industry. I am surprised that it has not been possible to standardize upon a type of joint for copper tubing. I should have thought that there was sufficient evidence available to support the use of the capillary joint. This type of joint is virtually a soldered one, with a mechanical strength which compares favourably with the blown joint on a lead pipe meter connexion, or on a union. The efficiency of the capillary joint depends on good workmanship.

Besides saving time, tools, and material, the use of copper has another advantage. Gas supply pipes cannot always be run under floors, in walls, or otherwise covered, and therefore sometimes have to be visible. The size of such exposed pipes and fittings must surely be a consideration. The following example emphasizes this point:

Type of material	Copper tubing	Wrought iron tubing
Nominal inside diameter	½ in.	½ in.
Outside diameter	$\frac{27}{32}$ in.	$1\frac{1}{16}$ in.

It will be seen that both copper and wrought iron tubing have the same inside diameters; therefore the carrying capacity of both tubes is the same. The copper tubing has a smaller outside diameter than wrought iron tubing, and makes possible the use of neater fittings, thus obviating the heavy appearance which tends to characterize gas installation pipes and fittings.

Appliance installation is a subject which, as Mr. Le Fevre rightly says, cannot be dealt with in a few words. There is no doubt, however, that in recent years the appearance of gas appliances has progressed more rapidly than the advance in gasfitting practice. When dealing with post-war building plans it is hoped that adequate provision will be agreed upon in respect of the planning of gas installations, and for the pipe work to be installed during the building process. There will exist, however, cases where an appliance and the various pipes connecting it have to be installed after a new building is completed and the internal decorations are finished; also there will be existing property to contend with. This fact, in itself, makes it very difficult to hide the installation pipes. This is where the correct materials, precision of fitting, and imagination on the part of the installation operative are required. Too often is the least line of resistance taken when installing an appliance. The fact that the cost of materials is high often seriously affects the installation of an appliance in an up-to-date manner.

Mr. Le Fevre refers to the use of specially finished installation pipes and fittings. These special finishes and fittings, however, tend to increase the cost of installation. The following example shows two methods of fixing a portable heater to point:

Case I.—Fittings used: Tube cock (brass finish); 3-ft. lead coloured flexible tubing with rubber push-on ends.

Case II.—Fittings used: Chromium-plated plug-in connector; 3-ft. nickel plated flexible tubing with screwed connexions and protective springs.

Both these installations provided gas to the appliance, although in Case II the cost of material was four times greater than in Case I. The difference in cost was actually only a matter of shillings, but when similar conditions are applied to the fixing of gas appliances generally, the difference in cost due to *de luxe* fittings is appreciable.

Another aspect of the example quoted is that the first installation would not, according to modern standards, be regarded as safe, whereas the second installation would have been. I emphasize this point of cost because it brings me back to the opening remarks of these comments, when the question of national practice was mentioned. Installation costs throughout the country are very variable, and are, in my opinion, due to differences in fitting practice. If some positive standards could be adopted I feel that fitting costs, particularly as they apply to materials (and perhaps labour), could be reduced.

Mr. Le Fevre, in reply, wrote: Mr. Rogers and I have collaborated to such a large extent on matters connected with gas installations and the training of personnel that it is only natural that we should be in close agreement on the subject of the Paper. Much of the work I am now doing is merely an elaboration of the pioneer work done by Mr. Rogers when he was with the Birmingham Corporation Gas Department.

Since presenting the Paper I have been associated with the development of suggested pre-fabricated compartments for housing the meter, and it would appear that the best method of fitting the meter in the compartment is by means of a limited range of pre-fabricated copper connecting pipes enabling either the No. 1 or No. 2 meters (ordinary or prepayment) to be interchangeable within the cabinet at will.

There appears to be no useful purpose served by adopting the meter bar for use in the meter compartment. Further, it can have but limited application elsewhere since, in the majority of reconditioned houses, the meter will be replaced in its previous location under the stairs where the existing service and outlet pipes remain undamaged. Where this existing site is at floor level it will not be economical to alter the whole pipe arrangement merely to use the meter bar. In these circumstances I would, however, reinstate the meter not with lead pipe, but with malleable copper, which will soon be available in quantity.

As I can see it, the application of the meter bar will be confined to

(i) New premises, if any, where there is no meter compartment. (I hope there will not be any houses without a meter compartment.)

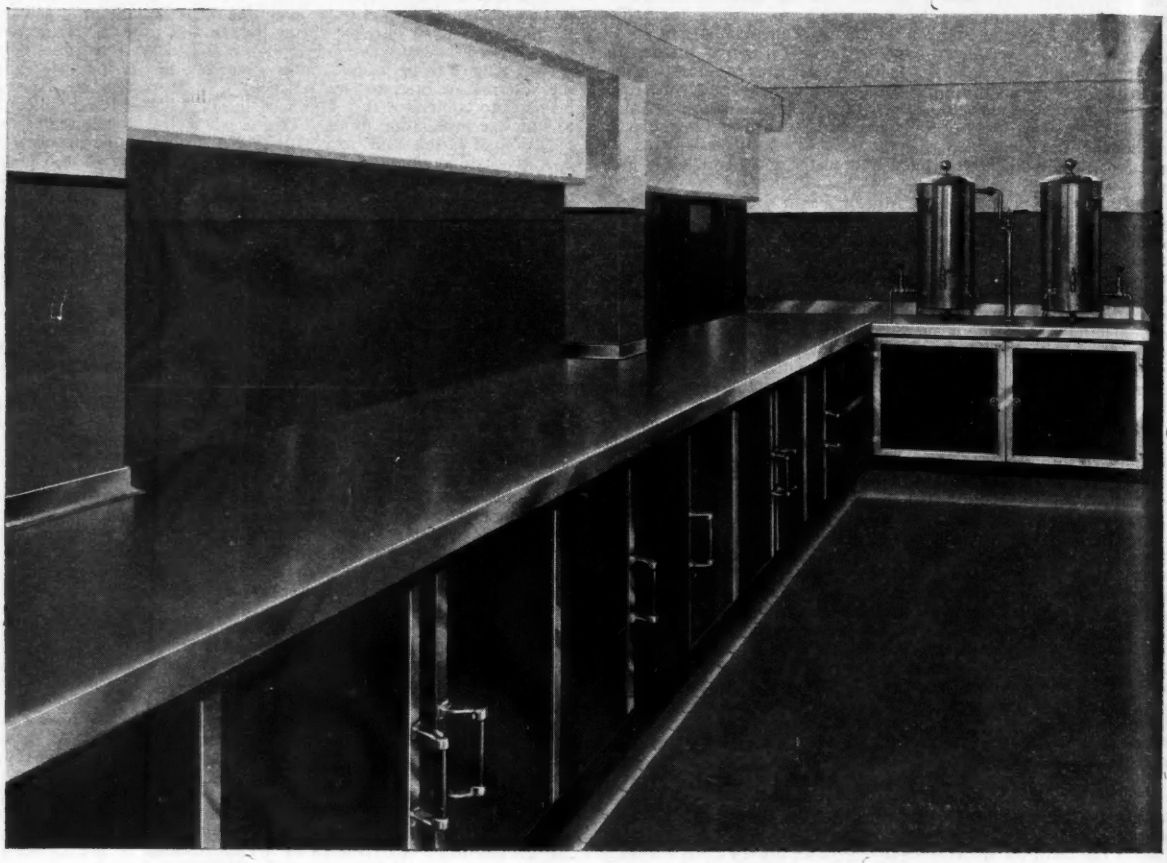
(ii) Re-conditioned premises where the service and installation pipes either exist suitably located or are refitted properly as known only too well by Mr. J. H. C. Bates.

Mr. Pinkess makes some useful suggestions, with all of which I agree. There is no reason why, with a properly designed internal installation, the maximum pressure loss should exceed 0.5 W.G., and hence a service governor fitted on the meter inlet should be standard practice on new installations.

Mr. Pinkess puts his finger on the crux of the problem when he calls for more attention to some of these small practical details. It is these small details which influence the public favourably or otherwise towards gas.

I particularly welcome the remarks of Mr. Bates who, in a large provincial undertaking covering several towns of varying size, is in agreement generally with the suggestions outlined in the Paper. As he rightly says, the "nearest half-inch" mentality is not good enough. The status of the gasfitter—or whatever better name we give him—must be raised; he must have the "nearest half-a-thou" mentality; and it must be general throughout the country.

LARGE-SCALE APPARATUS FOR THE COOKING AND SERVING OF FOOD



View of part of the Staff Service of a large Canteen Kitchen Installation by

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"Aerated" and "Non-Aerated" Gas Burners

The following written comments on the Paper by Mr. A. Forshaw to The Institution of Gas Engineers (see "JOURNAL" of July 5) have been made:

Mr. **G. E. Currier** (Bradford): The Author does not state definitely whether his tests proved that aerated or neat all-gas burners are to be preferred on cooker hotplates, but suggests that the real test must rest with production models in the hands of the ordinary user over a period of, say, two years. He states the case for both types of burner most impartially and one is left with the query, What do we hope to gain from all-gas burners? Increased efficiency? Reduced maintenance costs? Better appearance?

I understand from other sources that the thermal efficiency attained up to the present time is approximately the same, but the time factor is slightly delayed. The time factor, however, improves with a second or third boiling on the same ring, but who wants to boil two or three pans or kettles for one meal? What happens to the residual heat in the all-gas hotplate? Is this a net gain in efficiency over the bunsen burner? If not we shall be educating the gas user in the same way as the electric user, to turn off the gas before the water boils, &c., and I should regard this as a retrograde step. There are many factors in gas hotplate cooking which cannot be evaluated in figures:

(1) The open hotplate allows the consumer to see the state or size of the flame—a decided advantage over electric cookers, as any housewife will testify.

(2) The much criticized "injector hiss" is a constant reminder that the cooker is in use—who hasn't heard of the electric cooker being left on for hours by accident or oversight?

(3) The consumer is not alarmed or shy of dismantling the appliance for cleaning without tools or skilled help.

(4) Replacement costs are negligible.

(5) The consumer can use aluminium ware, tinware, or enamelled ware in any condition for frying or boiling and get the same overall satisfactory result.

Admittedly the pre-war griller was open to the objection that fat and food spillage caused a nasty odour, and certain advocates would have us separate the griller from the cooker. Why? The present-day gas cooker is the complete unit, and surely it is not beyond the skill of manufacturers to give an enclosed or covered grill compartment.

Apart from operational costs the outstanding advantage of the gas cooker over the electric cooker is the speed of operation coupled with the inherent advantage of all-gas apparatus, the ability to adjust heat input from minimum to maximum at the turn of the tap. These advantages, together with automatic oven control giving a wide variation of temperature at consumer's option, are our bulwark against competition, and we cannot afford to sacrifice one second of time or one degree of adjustability in the post-war appliances.

Probably the best type of cooker for the post-war period is one embodying the all-gas burner for the oven and retaining the bunsen burner for the hotplate.

Regarding the adoption of all-gas burners for gas fires, this appears to offer immediate advantages, and Mr. Forshaw seems to think the cost of this burner may be cheaper than the aerated burner and its ancillary fitments, and this will be welcomed.

Dr. **N. Booth** (Gas Research Board): Mr. Forshaw's Paper is extremely interesting to those engaged in considerations relating to burner characteristics. Although he was unable to complete his original programme of investigation, the results he quotes are very valuable. Many of these results suggest tentative explanations which could be confirmed or dismissed by a little further work. For example, it is shown in fig. 1 that horizontal flames are the most efficient for heating hotplates, and one might suggest that this is due to a more uniform transfer of heat from the flames to the bottom of the vessel containing the water. This could be tested by finding whether the same relative efficiencies were obtained between say B 1 and B 2, with a vessel of thicker base, which would ensure a more even temperature distribution in the case of the vertically arranged jet.

Some preliminary experiments on burner characteristics have shown that the aeration of one type of "non-aerated" burner jet is much superior to that of an ordinary pinhole jet. A further range of jets is in the course of examination, and it is intended to extend the investigation in an attempt to elucidate the features of design which ensure the provision of a reasonable quantity of air by entrainment as distinct from diffusion.

There is one point that might be added to what Mr. Forshaw has to say about "vulnerability." In water-heaters the effect of a partial stoppage, as for instance sometimes occurs when corrosion products fall into a jet, is to deflect the flame so as to impinge directly on the metal parts of the heater. Distortion and destruction follow if this impingement is prolonged.

Mr. **D. M. Holloway** (Parkinson Stove Co., Ltd.): In the section on hotplate efficiencies the Author does not state whether an allowance is made for the water equivalent of the vessel, and it would be interesting to know whether this correction has been included. The figures shown for burners A 1 and B 1 of the order of 60% efficiency full on seem to be higher than I should have expected, compared with efficiencies which have been carried out on a similar burner fitted with pan supports, although some of the difference can be explained by the fact that the curves in fig. 1 appear to have been taken at the smallest of the pan distances shown in fig. 4. With regard to the variation of efficiency with distance from burner to vessel, it is stated in the text that horizontal flames show similar efficiency variations with very much smaller movement than vertical flames. The curves given in fig. 4, however, do not seem to support this, as the curve for B 3, the vertical pinhole burner, is actually steeper than the curves for B 1 and B 5, which are horizontal flame burners.

The remark that allowance would have to be made to the efficiencies of vertical or gas burners for the effect of protection is extremely to the point, for it is obvious that any protection of a vertical flame which is going to be adequate is bound to have a quite remarkable effect upon the efficiency.

With regard to gas fires it would be interesting to know, in the case of the two fires for which radiant efficiency tests are given, whether the fires used with all-gas burners were designed for use with these burners or were a conversion of an existing bunsen burner design.

Reply to Discussion

Mr. **Forshaw**, in reply, wrote: So far as Mr. Currier's comments deal with the subject of the Paper, as defined in its title, they call for little in reply. The numbered paragraphs, however, mention one or two points, mostly in favour of bunsen flames, which were not raised in my Paper. Several of these points, such as (1) and (5), assume that a solid hotplate must be used with an all-gas burner, but this is, of course, not necessarily the case, as it is possible to design an all-gas burner for use with open bars. No. (5), however, may be of considerable importance where a solid plate is used. No. (2) adds another justification to my own preference for a noisy hotplate burner—viz., that it usually indicates good aeration and presumably high efficiency.

The question of the separate griller was rather neatly dealt with in my presence the other day when it was suggested that if nothing but separate grillers were known the invention of a griller combined in a hotplate with the boiling burners would be hailed universally as a great advance in design!

In his last paragraph, suggesting advantages from the immediate adoption of all-gas gas fires, Mr. Currier omits to note that my figures disclosed for them a serious loss of radiant efficiency as compared with bunsen gas fires, and my submission that this disadvantage requires the use of convecting devices to help to counteract it.

Dr. Booth makes an interesting suggestion regarding the use of horizontal and vertical flames for heating water, but I am not clear as to how thickening the base of the vessel would give any useful information. Surely thickness is the least of the factors concerned, and skin resistance, both in the cool gaseous film in contact with the metal and in the water to metal surfaces would not be affected by the thickening and would still entirely mask its influence. I am inclined to the view that vertical flames are slightly less efficient because those nearest the edge of the vessel do not have sufficient surface to which to impart their heat, whereas the horizontal flames must all traverse, from the point of origin, over at least one-third a diameter of the vessel before reaching the edge. I should, therefore, expect the gases turning the corner to the sides to be at a slightly lower average temperature with the horizontal than with the vertical flames.

I am not surprised to learn that some all-gas burner flames are more aerated than pinhole jets, and I should welcome the results of the projected work on air entrainment in all-gas burner flames.

Finally, while I did not specifically allude to the disadvantage mentioned by Dr. Booth when all-gas flames are deflected in water heaters, I did refer to a general disadvantage due to this cause.

Mr. Holloway asks about the water equivalent in the boiling burner test. It has been allowed for. The curves in fig. 1 were usually taken at the nearest distance from the vessel at which, with a full-on rate, the CO/CO_2 ratio was within the recognized limits, or, alternatively, at the distance normal to the appliance to which they belonged. The statement in the text about the variation of efficiency with distance was not made from a consideration of the actual curves shown, but from a more general consideration involving an extension of the curves. It will be noticed, for instance, that the lower part of B 3 is much less steep than the upper part.

The two fires were bought on the open market and were not experimental so far as I am aware.

More I.E.S. Groups

Light and Lighting, the Journal of the Illuminating Engineering Society, says that the steady increase in the number of I.E.S. Centres and Groups has been largely responsible for the large increase in membership since 1939. Developments are still proceeding. One of the latest instances is afforded by the Western Area, where the coalition of Bath and Bristol Groups into a recognized Centre is being followed by efforts to form a group, allied to it, in Gloucester and Cheltenham. Anyone interested in this project is invited to get into touch with Mr. J. S. Freemantle (11, St. Aldate Street, Gloucester), who has already been successful in getting a considerable amount of support. Thus the Western Area promises to become a substantial one.

In other areas, for example, the North Midland, where I.E.S. representation is powerful, other groups may very likely be formed. The recently formed Stockton-on-Tees Group in the North-Eastern Area is gaining strength.

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GAS PRODUCTS PRICES

The London Market Oct. 2.

A Government Order came into effect on March 1 controlling the price of Benzole and Coal Spirit and replacing the Control of Coal Tar Naphtha and Xylole Order, 1943.

The Order is known as the Control of Benzole and Coal Spirit Order, 1944 (S.R. & O. 1944, No. 172).*

By this Order the price of Motor Benzole is fixed at 2s. per gallon. The Order also lays down the method of evaluating Crude Benzole.

The Order also calls for periodical returns to the Ministry of Fuel and Power from all producers of Crude and Refined Benzole.

In connexion with the Coal Tar products market, the Government Order designated the Contol of Toluene (No. 4) Order, 1944 (S. R. & O. 1944, No. 170), contains an amendment of the Control of Toluene (No. 3) Order, 1943.

Attention is called to a new Government Order, which amends the price of Toluene as from Sept. 1, 1944. The Order is entitled, The Control of Benzole and Coal Spirit (No. 2) Order, 1944 (S. R. & O., No. 988).

The only change in connexion with the prices of Coal Tar Products refers to Naphthalene. A new Government Order, entitled the Coal Tar Products Prices (No. 2) Order, 1944 (S. R. & O. 1944, No. 1051), allows increases in the maximum prices for all forms of Naphthalene. The new Order comes into force on Sept. 22, 1944.

* Slightly amended by Control of Benzole and Coal Spirit (No. 2) Order, 1944, which amendments come into force on Oct. 1.

The Provinces Oct. 2.

The average prices of gas-works products during the week were: Pitch and Crude Tar,* Toluole, naked, North, 90's, 2s. to 2s. 2½d., pure, 2s. 9d. (now controlled by S. R. & O. 1944, No. 988, operative from Sept. 1, 1944. Benzole and Coal Spirit, also Coal Tar Naphtha and Xylole, are now controlled by the Control of Benzole and Coal Spirit Order, 1944, dated Feb. 18, 1944, S. R. & O. 1944, No. 172, operative from March 1, and S. R. & O. 1944, No. 988, part 1, operative from Oct. 1, 1944. Carbolic acid, 60's, anthracene, creosote oil (hydrogenation), coal tar oils (timber preservation, &c.), and strained anthracene oil controlled by the Coal Tar Products Prices Order, 1943, dated Oct. 20, 1943 (S. R. & O. 1943, No. 1528), operative from Nov. 15, 1943. Naphthalene now controlled under S. R. & O. 1944, No. 1051, operative from Sept. 22, 1944.

* In regard to pitch and crude tar prices we would ask readers to refer to the editorial note on p. 396 of the "JOURNAL" for Sept. 10, 1941.

Scotland Sept. 30.

New business has been scarce during the week. Refined tar*: Yield to distillers is 4½d. per gallon *ex* Works, naked. Creosote oil: Timber preserving quality,* 5½d. to 6½d.; hydrogenation oil,* 5⅞d.; low gravity or virgin oil,† 7½d. to 7½d.; benzole absorbing oil,* 6½d. to 8d. per gallon. Refined cresylic acid* is 3s. 6d. to 4s. 6d. per gallon *ex* Works, naked, according to quality. Crude naphtha†: 6½d. to 7d. per gallon. Solvent naphtha*: Basic prices delivered in bulk, 90/160 grade, 2s. 8d., and 90/190 Heavy naphtha, Unrectified, 1s. 10½d.; Rectified, 2s. 2d. per gallon. Pyridine†: 90/160 grade, 13s., and 90/140 grade, 15s. per gallon.

* Price controlled. † Uncontrolled.

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